New Dutch Mineral Planning Act in a structural outline plan: from zoning to import

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New Dutch mineral planning in a structural outline plan: from zoning to import

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1. Introduction

To provide for the annual Dutch building requirement approximately 44 million m^3 of elevation sand, 22 million tons of concrete and mortar sand, 4 million m^3 of clay and about 7.5 million tons of gravel are quarried in The Netherlands (Lower House, 1994a). Nearly 1000 hectares is thus dug up per year in The Netherlands. A large proportion of this is dug up in such a way that an expanse of water remains.

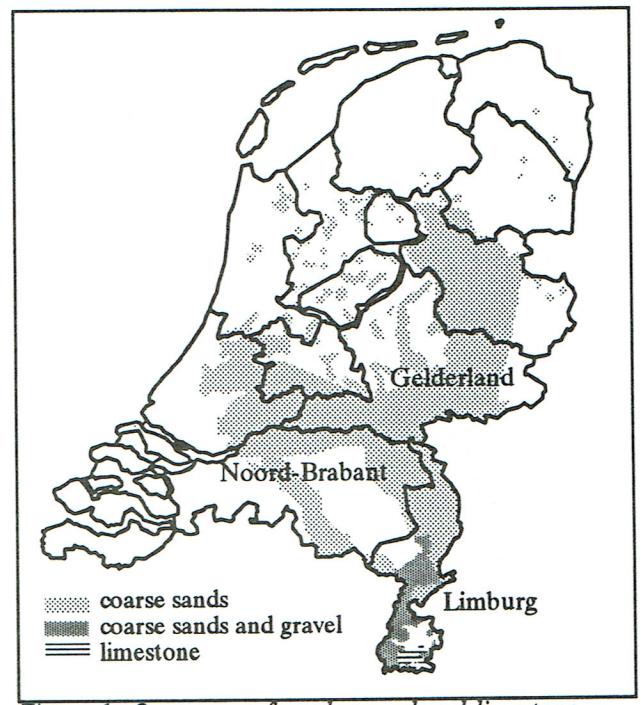

Figure 1. Occurence of sand, gravel and limestone.

The Netherlands has a very high mean density of construction activities. Many surface minerals are needed for this purpose, for instance cement, concrete, asphaltic concrete and bricks. In The Netherlands the aggregates which can be used as construction materials - such as sand, gravel and clay - are restricted to unconsolidated deposits at or near the surface because of the almost total absence of hard-rock outcrops. Due to the considerable increase in the demand for minerals after World War II, the area used by mineral workings expanded considerably. At present due to both geological scarcity and social opposition to the use of space for the extraction of surface minerals, the required space is increasingly less easily available. The original landscape disappears after all. In the past the disappearance of land and the intention for derelict quarries has not always been considered carefully. The problem is aggravated by the fact that a number of important aggregates can only be exploited in a limited number of provinces for geological reasons

(see figure 1).

With the development of mineral sites many other interests have to be taken into consideration. This makes it an increasingly arduous task to make the relatively scarce area in The Netherlands available for the extraction of surface aggregates. This then is where the task of mineral planners and mineral planning lies. According to the recently proposed Mineral Planning Act the state draws up a Structural Outline Plan on Surface Minerals. In this article the state policy described in the plan will be focused on. The Dutch surface minerals and the context of the structural outline plan will briefly be dealt with. Following on from this, the content of the plan will be examined. The article will be rounded off with some concluding remarks.

2. Dutch surface minerals

Some of the major aggregates in The Netherlands will be illustrated in this section. These surface minerals are gravel, sand, limestone and clay. For sand a distinction can be made between elevation sand and concrete and mortar sand (also referred to as industrial sands). Elevation sand can be extracted in every province. The other raw materials are unevenly distributed over The Netherlands. Due to geological occurrence the majority of surface aggregates for Dutch building works comes from three provinces in central and southern Netherlands: Gelderland, Noord-Brabant and especially Limburg. The inconvenience is therefore most noticeable here.

Exploitable *gravels* only occur in the province of Limburg. So far, gravel production is limited to the central part of Limburg, especially in or near the river bed of the Meuse. An extension of this area in other directions faces many objections, not least because of the very varied land use of Limburg. As early as 1990 an agreement was made between the state and the province Limberg for gravel. In this it was agreed that only 35 million tons may be produced for national requirement after the existing exploitation possibilities have been exhausted. In the context of accepting the 'Deltaplan Big Rivers' - as a result of recent floods - another 25 million tons of extra gravel will be exposed by the lowering of the winter and summer bed of the Meuse. This mining has the character of a large scale nature development project.

Exploitable *sands for concrete and mortar* can be found in the central and eastern part of The Netherlands. At or near the surface these sands are found in the depositional areas of the Rhine, IJssel and the Meuse. In the past, sands for concrete and mortar were dredged from the river courses of the Meuse and the Rhine, but because of its interference with shipping, the mineral workings were increasingly restricted to the major rivers in the northern part of Limburg and in the provinces of Noord-Brabant and Gelderland. Additionally, industrial sands were obtained in Middle Limburg as a residue of gravel

extraction. On a local scale some medium to coarse grained sands are also extracted in small open pits in the provinces of Utrecht, Drenthe and Groningen.

Because the standards applied to *sands for filling and elevating ground* are much less stringent than those for concrete and mortar, a wide range of sands can be used for this purpose. Most of the Holocene and Pleistocene formations occurring at or near the surface in The Netherlands and in the Dutch sector of the North Sea supply filling material. On balance there is no lack of fine(r)-grained sands in the Netherlands. Except in some of the western provinces, these relatively fine-grained sands are intended for local use and are usually dug from dry pits or dredged from small artificial lakes created in the vicinity of construction sites.

Limestone occurs in the most southern part of the province of Limburg. In addition a small quantity is found in the eastern part of the province of Gelderland. Limestone is used for the preparation of mortar and the production of animal fodder.

Particles of *clay and silt* were deposited by sea in the coastal areas and by the large rivers in the central Netherlands. Most clays are used for the production of bricks and roofing tiles (coarse ceramic industry). Clay workings are mainly found on the banks of large rivers in the province of Gelderland. Presently, relatively small amounts are obtained from clay pits elsewhere, such as western Noord-Brabant and Limburg. Some specific clays required for fine ceramic products are imported. In The Netherlands an annual quantity of about 2.2 million m^3 of clay is necessary for course ceramic products. Furthermore about 1.9 million m^3 of clay are used for dike building purposes as well. In both cases the Netherlands is self-sufficient.

3. Context of the structural outline plan

A structural outline plan contains main outlines and principles that are of general importance for national spatial policy, but with regard to a specific sector of national policy (Brussaard, 1987). It gives insight into the spatial aspects of that sector over the medium and long term. A structural outline plan is accompanied by one or more illustrating maps. It is primarily an instrument of sector planning. However the content of the plan offers the possibility for mutual harmonisation of sector and facet. It is, as it were, standing at the cross-point of sector and spatial facet planning. The structural outline plan is thus in addition to being a raw material memorandum for building, also a spatial policy memorandum.

A structural outline plan goes through an extensive, prescribed procedure of participation, advice and consultation. It must be approved by the parliament. In the new set up of the mineral planning act the Minister of Transport, Public Works and Water Management and the Minister of Housing, Physical Planning and Environment sign the plan.

The structural outline plan goes through what is referred to as the procedure for National Planning Key-decisions. This occurs in four stages. First part 1 is issued, the draft planning key decision with the policy resolutions of the cabinet (March 1994). Part 2 contains the reactions to the draft planning key decisions (June 1994). This incorporates the basic ideas from the participation, report of the hearing, the reaction of the provinces and the advice of the Council of Advice for Spatial Planning and the Council for Transport & Water Management. In addition to this the administrative consultation is reported in this part. Recently part 3 was issued with the definitive point of view of the cabinet. Part four is the final planning key decision after the Lower and Upper House have given it their approval.

When setting up regional plans provinces need to take into consideration the policy as determined in the structural outline plan. The state will test whether the provincial regional plans are sufficiently in line with the statements in the Structural Outline Plan Surface Minerals. On behalf of the state, the Minister of Housing, Physical Planning and Environment can use the so-called directive-authority determined in article 6 of the Physical Planning Act, if a province does not follow through decisions in the outline plan sufficiently. The minister of Housing, Physical Planning and Environment can give the province a directive regarding the content of the regional plan. The province should incorporate the mineral site desired by the state in the regional plan. If exploitation is forthcoming, the minister of Transport, Public Works and Water Management can also give a directive regarding permit issuance. The province subsequently has to adopt the permit granted or yet to be granted.

4. Content of the structural outline plan

In this paragraph the content of the structural outline plan is examined. In the structural outline plan a comparison is made between the needs of extracting surface minerals and the spatial utility possibilities. The structural outline plan covers the period until 2020. It consists of the so called planning key decision and an extensive elaboration (Lower House, 1994a). The planning key decision contains the policy statements that the cabinet considers important. The main aim also falls under these policy statements (see figure 2).

Provision in the need for building raw materials, by :
- promoting the resourceful use of raw materials.
- promoting the application of as many secondary raw materials as possible.
- promoting the application of recyclable raw materials (wood).
- taking responsibility for the timely extractability of a sufficient proportion of surface aggregates from Dutch soil in the total building raw material provision.

Figure 2. Main aim of state policy for raw material provision.

For the purpose of the policy of the state government, with respect to mineral provision for building, quantative frameworks have been set up for the surface aggregates which could be extracted in The Netherlands in the medium and long term. In this the import and export of aggregates and the application of secondary raw materials has been taken into consideration. Figure 3 shows the national excavation, import, export and use of secondary materials. The complete national use is the amount above zero in the graph. For the import of gravel, the rubble of rock has been included. Furthermore, the structural outline plan gives an indication of the long term expectations per aggregate. In general terms the state expects a steady increase in the amount of waste and recycled materials. A notable growth is expected in concrete and mortar extraction in The Netherlands and a reduction in national gravel extraction. The extent of elevation sand-quarrying in The Netherlands will remain about the same. In the long term the state envisages an increased import of gravel.

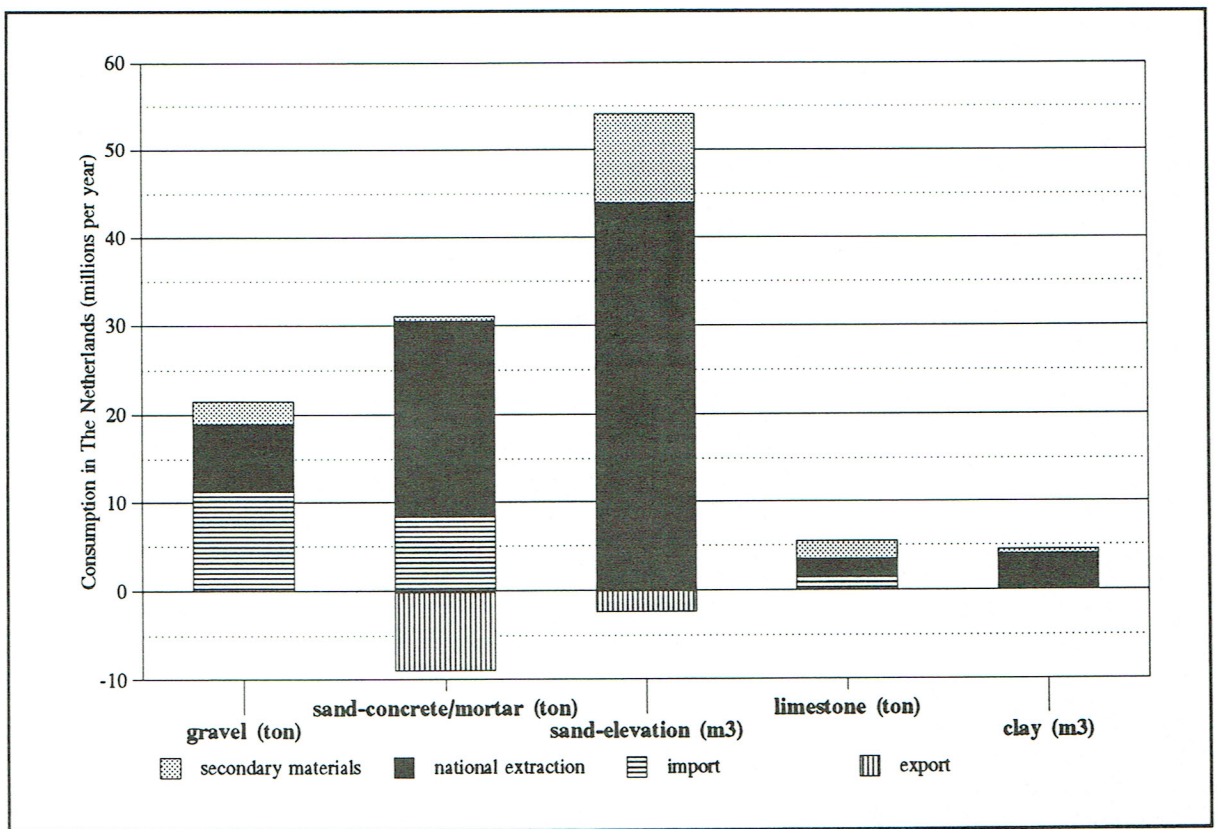

Figure 3. The surface aggregates in millions per year (according to: Lower House, 1994a).

In the structural outline plan maps have been incorporated of the geological occurrences and extraction possibilities. The maps are composed of a number of steps. In the fist instance the national spatial policy in force has been drawn up. From this the areas emerged, about which the state has already made explicit statements in other plans, as to

the possibilities and impossibilities for mining surface aggregates. In a second step stock has been taken of the geological occurrences. A combination of both inventories subsequently led to an overview of extraction possibilities per surface aggregate. In the outline plan it has been worked out in its totality in three zones:

- Zone 1: In principle no surface mining;
- Zone 2: Under conditions surface mining permitted;
- Zone 3: In principle surface mining permitted.

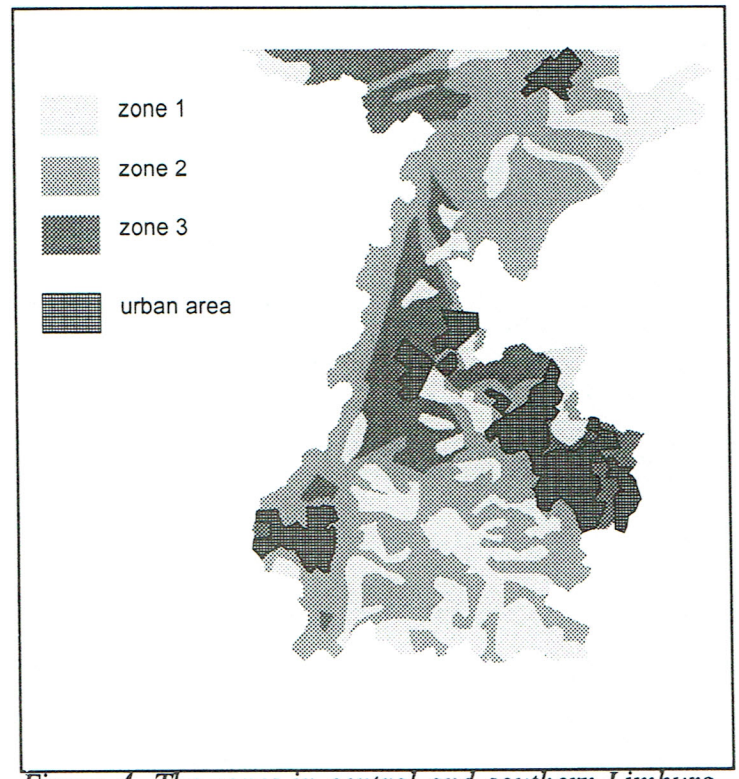

Figure 4. The zones in central and southern Limburg.

An example of this zoning is depicted in figure 4. In zone 1 the cabinet regards the mining of aggregates as unacceptable. An exception can only be made if there is a question of weighty social interest. This is the case if the need cannot be met in another manner or elsewhere. A compensation of lost values will then have to be offered. In zone 1 mining may occur for the development of new nature. Zones 2 and 3 are collectively referred to as the 'searching area'. This is the area within which it is permitted to look for new mineral sites. In zone 2 mining is not allowed, unless certain regulations have been met. These are regulations concerning for example sparing the natural and physical values of areas. In zone 3 no special regulations are applicable. Preferably the locations for new mining will be in this zone.

Zoning leads to conclusions about bottlenecks and the necessity for measures per aggregate. According to the structural outline plan the geological occurrence of gravel and limestone are more limited than that of the other surface aggregates. The mining potentialities of this are limited. The supplies of the other surface aggregates are still large. For *concrete and mortar sand* the cabinet considers there will be enough possibilities available in zones 2 and 3 to meet the requirement. There are as yet no limited mining potentials for concrete and mortar sand. Until the beginning of the next century there are enough new *gravel* quarries within zones 2 and 3. After this, gravel

extraction for the national provision will be stopped. It is expected that the import of gravel and rubble from rock (broken rock) will increase drastically. In addition to this, to a limited degree, gravel will be able to be extracted from a small part of the North Sea. *Elevation sand* occurs in very large quantities in The Netherlands. Within zones 2 and 3 according to the plan, there are therefore enough possibilities to meet the requirement. The cabinet wishes to use as much sand as possible from the bottom of the North-Sea. This would be to replace the extraction of elevation sand in the densely populated west of The Netherlands. For *clay and silt* it is also the case that there are sufficient possibilities to meet the need. In the forelands of the rivers in the central Netherlands a lot of clay excavation can be combined with nature development. For *limestone* it is the case that the present permitted provision can ensure to meet the need for extraction until 2020. Within the period of consideration of the structural outline plan there are therefore no great problems to be expected for limestone. However the cabinet does not want any new quarries in the physically and naturally valuable areas in South-Limburg (zone 1).

Since industrial sands and gravel are needed throughout the country in the building industry, and not all provinces have enough of these raw materials, other provinces have to make these available. All provinces where gravel and industrial sands occur have had so called *target levels* imposed on them in the Structural Outline Plan Surface Minerals. This means that these provinces have to grant permits timely and in sufficient quantities to provide for the domestic requirement. The starting point is that every province provides for its own requirement as much as possible. However to provide for the remaining requirement gravel, concrete and mortar sand come per ship from provinces with a target level. The province Limburg has a task assigned to it for gravel. The provinces with the highest tasks for concrete and mortar sand are Gelderland, Noord-Brabant and again Limburg.

The state policy aims at an *economical use of surface aggregates*. This is possible by applying secondary raw materials and replacing scarce surface aggregates. One can assume the recycling and the useful application of waste materials. The starting point of the state is a perspective on the application of waste and recycled material of maximally between 10 and 15% (Lower House, 1994a). For the use of secondary raw materials a division of tasks has been agreed with the building companies, the state, provinces and municipalities. In order to enhance the economical use of minerals, the government is introducing a new method. It wishes to impose a levy on surface aggregates. In part 1 of the structural outline plan the starting point is a levy on extracted and imported surface aggregates of 1 Dutch guilder per ton. The proceeds of this the government wishes among others to spend on research into the resourceful use of surface aggregates and the

development of nature in quarried areas. The cabinet assumes that the levy will ensure that 'a few percent' less surface aggregates will be extracted in The Netherlands.

5. Concluding remarks

It should be stated that if the analysis in the structural outline plan ascertains a shortage in a particular surface aggregate, three reactions are possible.

First weighing out the interests could lead to restricting the national spatial policy in other sectors, so that extraction can continue. However, it seems that the national government is increasingly less prepared to go to any trouble to realise new mineral excavations at the cost of spatial policy in other sectors. This is related to the continued increase in the social resistance against mineral extractions. Mineral Planning is increasingly confronted with competing pressures on land and with conflicting demands.

A second reaction is a strong increase in the application of waste and recycled materials. Construction and demolition waste and remnants from industry can be used as secondary minerals. Also dredging spoil seems to be recyclable in construction. At the moment the use of secondary raw materials occurs to a limited degree in road and water construction. Replacement of elevation sand is especially the case then. In the long term the possibilities for all aggregates will only slowly increase.

Thirdly, the problems could partly solve themselves because the building industry and especially the quarrying industry, import the necessary minerals from abroad. This is especially true for gravel excavation. The previous article about the new Mineral Planning Act already showed that a law has been submitted with a certain centralistic 'big stick', but that if insufficient use is made of the means in the new law, the import of gravel, limestone and to a lesser degree concrete and mortar sand will be enhanced. As gravel-excavation will be stopped, the building industry thinks internationally. Traders derive gravel from foreign pits and mineral operators are busy getting concessions abroad in order to import the products into The Netherlands. In The Netherlands gravel has long been imported from exploitation areas along the Rhine in Germany. The gravel was taken as return cargo by ships which transported general cargo upstream to Germany. Gravel is also imported from Belgium. This is excavated along the left bank of the Meuse in Belgium. The land-use problems in the mineral excavation areas in Germany and Belgium are, however, comparable to those in The Netherlands. It concerns densely populated areas with a high demand for building materials.

It seems almost certain that in future some restraints will be imposed on the export of minerals (unconsolidated deposits) from these populous areas in Germany and Belgium along the Rhine and the Meuse to The Netherlands. Consequently, it is likely that the quarrying of minerals in Europe will shift from the populous areas to the much less

populated areas where the social resistance to excavation will as yet be lower. This process has already started. Examples of this are the mineral extractions, situated in the much less populated areas in Norway and Scotland.

An important question is how the Dutch policy is judged in an international comparison of areas. From an environmental viewpoint it seems desirable to set up comparable studies in an European context so that a better assessment of exploitation locations can be made with regard to their suitability. The cabinet will start up international consultation if there are resolutions to take policy decisions which would lead to increasing import. In such an instance the cabinet would like to reach agreement with the countries Germany, Belgium and Great Britain.

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